whole, the book is singularly interesting, and well worth reading. We may be able hereafter to notice more in detail, and discuss more fully, some of the themes which Sir Henry Maine has made so attractive.

REPORT OF THE UNITED STATES EN-TOMOLOGIST.

Report of the entomologist (of the department of agriculture) for the fiscal year ending June 30, 1882. By C. V. Riley. Washington, *Government printing-office*, 1882. 167 p., 20 pl. 8°.

THE report before us, which is extracted from the annual report of the department of agriculture, is not only the most voluminous contribution to economic entomology of the year just closed, but it presents the results of the most extensive investigations in this field during that period. The author, an entomologist of unusual ability and experience, was aided by a corps of very efficient assistants, and had at his disposal a large appropriation. This combination could not fail to produce important results.

It is to be regretted that the report reflects the character of too many other public documents, in that much is printed which has not the slightest permanent value; letters, for instance, from correspondents, often in full, which could have been advantageously reduced to half their extent; or accounts like that of the invasion of the army-worm in New Jersey, which is pleasant reading enough, and well suited to a popular journal, but out of place here in the form in which it is cast. Very different from these are the portions written by the entomologist and the members of his staff: these are direct, and to the point.

As the volume containing this report may be had for the asking, it will be in the possession of all who are especially interested in economic entomology. On this account, it is not worth while to refer, in this place, to each of the many topics discussed. A few of them are of general interest.

The circular which accompanied the seeds of Pyrethrum, that were distributed by the commissioner of agriculture, is reprinted, and is illustrated by two excellent colored plates representing the flowers and leaves of P. roseum and P. cinerariaefolium. The circular gives a *résumé* of what is known respecting the history of Pyrethrum, the method of preparing the powder, and the modes of using it. Dr. Riley adds reports from persons to whom seeds were distributed. Only a few persons succeeded in raising good plants. These were chiefly in the north. The failures were probably largely due to drought and bad seed. A report of experiments with the powder, by Miss Murtfeldt, is also given.

Acting under the direction of Dr. Riley, Mr. Hubbard experimented upon scale-insects with various insecticides, and especially with emulsions of kerosene and milk. These emulsions were the most efficient of the substances used.

Several insects infesting the rice-plant are described. The rice-grub is the larva of a beetle (Chalepus trachypygus). This insect feeds upon the roots of rice, and has done considerable damage to rice-plantations. Howard states that the larvae and adults are both destroyed by the 'harvest-water;' and consequently the breeding-places must be those fields which are not flooded, and the patches of volunteer rice. Therefore the insect can be easily kept in check, except where upland rice is grown. The rice-stalk borer (Chilo oryzaeellus) is a new lepidopterous insect described by Riley. The habits of the larva, which are indicated by the popular name, are reported by Howard.

Economic entomologists will note with especial interest the discovery of the larva of the 'corn bill-bug' (Sphenophorus robustus). This larva infests the stalks of corn at or near the surface of the ground. If, as is now supposed, the adult beetle hibernates in the stalk, ploughing up the stubble, and burning it, will be a simple remedy.

'The smaller corn-stalk borer' (Pempelia lignosella) is a new corn-pest which is very destructive in the Carolinas and Georgia.

In an article on the cotton-worm, a machine for spraying the cotton-plant from below is described, and illustrated by a full-page figure.

Embodied in this report is a part of a report on miscellaneous insects, made by Prof. J. H. Comstock to the commissioner of agriculture; the most interesting portion relates to lac insects, of which two species are described from Mexico and the adjoining portion of the United States.

MACGREGOR'S BALUTCHISTAN.

Wanderings in Balochistan. By Sir C. M. MACGREGOR. London, *Allen & Co.*, 1882. 315 p., illustr. 8°.

THIS is a rather loosely written narrative — with a tendency to slang expressions, such as 'green funk,' 'make tracks' — of a reconnaissance expedition undertaken in 1876–77, in company with Capt. R. B. Lockwood, who,

unhappily, died shortly after the end of the journey from the effects of exposure. There is a provoking lack of appreciation of geographical form, and a want of understanding of geological structure, that deprives the observations of much value; and the pen-drawings that illustrate the book in good number are extremely rough. Perseverance and energy are, however, apparent enough in the success of the expedition; and the itinerary notes as to roads, supplies, and water, have a great value for those who may have to repeat the author's journey in this desert country. The party entered from the southern coast at Gwadar; and, after traversing for some two hundred miles a barren region of flat valleys or plains abruptly broken by mountain ranges, they reached the desert interior basin, into whose depressions the Mashkel flows from the south; the Halmand and others, from the north-east and north; and several smaller temporary streams, from the surrounding or dividing ranges, forming salt plains or marshes (hamun) at the lowest points. This district is absolutely barren, and very flat, broken only by sand-ridges, or occasional rocky peaks that rise like islands over the level plain. The largest central depression, known as the God-i-zirreh, is a dry salt waste about seventy miles long east and west, and twenty miles wide, surrounded by a barren sandy desert; and the passage across the southern margin of this desolate tract, hitherto unexplored, to a point named Shah Godar, exposed the explorers to great hardships. Water was found there only by digging in the sand of a dry stream-channel (175–185). This was their farthest station; and from it they returned eastward to Jacobabad, in Sind. The people were found avaricious and untrustworthy: their towns were of the most forlorn description. The difficulty of learning local names was not small. The instructions given by a local official to a guide who was to accompany Macgregor were overheard by him: 'This sahib will ask you the name of every hill, every river, and every hut you see.' — 'What for?' — 'Heaven only knows! These sahibs always do that: they ask the name of every thing, and then write it down.' — 'But how am I to name all the hills?' — 'Call them any thing you like, and he will write it.' It seems, that while the people have names for the ravines that they follow, and for the stopping-places on them, they generally have no names for hills and ranges; nor have they any idea of the connection of mountains with each other, or of any system of drainage. Sand-hills are very numerous on the deserts; and, on the plain north of the Mashkel hamun, a peculiar form was noticed, provoking one of the few pieces of careful description in the book (p. 157). The examples were very numerous, and all closely alike; their form was crescentic, and the largest were sixty feet high at the middle of the curve, descending to the general level at the horns; the outer slope is 30°, and the inner 45° with a still steeper inclination at the outer side of the top of the ridge; they stand on a perfectly level plain, with the curve to the north or windward, and horns to the south. One would 'afford cover enough for a regiment or two.' The author imagines that some obstruction like a bush formed the nucleus about which the sand originally gathered. A sketch-map accompanies the volume; but there is often an unfortunate disagreement in spelling between it and the text. Table of contents and index are lacking.

WEEKLY SUMMARY OF THE PROGRESS OF SCIENCE.

MATHEMATICS.

Strain of an isotropic solid. — Mr. Stearn has given a very brief method for obtaining the expression for the internal energy per unit volume of a strained isotropic solid. — (*Quart. journ. math.*, Feb.) T. C. **[967**

Elliptic functions. — Mr. Glaisher has given a series of integrals of functions depending upon elliptic functions. The paper is of such a character that it is impossible, in this place, to do more than refer to it. It may, however, be remarked that the set of integrals obtained constitutes a valuable addition to the known elliptic function formulae. A continuation of the investigations may be inferred from the manner in which the author has introduced the present article. — (*Quart. journ. math.*, Feb.) T. C. **[968**

Spherical triangle. — Professor W. W. Johnson remarks, that in the proof of the addition theorem in elliptic functions by means of a spherical triangle whose sides are ϕ, ψ, and μ, where $\phi = \operatorname{am} u$, $\psi = \operatorname{am} v$, $\mu = \operatorname{am}(u + v)$, and k is the ratio of the sines of the angles to the sines of the opposite sides, it is usual to state that the angle opposite to the side μ is obtuse, so that its cosine is $-\Delta\mu$, if the other angles are acute, so that their cosines are $\Delta\phi$ and $\Delta\psi$. This may be shown to be a consequence of the assumption that k is less than unity. The present note aims to show that the restriction, $k < 1$, may be removed, in accordance with which $\Delta\mu$ is always positive; proving directly, that, in all cases, the cosine of the angle in question is $-\Delta\mu$. It is further shown, in order to complete the proof, that the triangle from which the formulae are derived is possible for all real values of u and v, as well as k. — (*Quart. journ. math.*, Feb.) T. C. **[969**